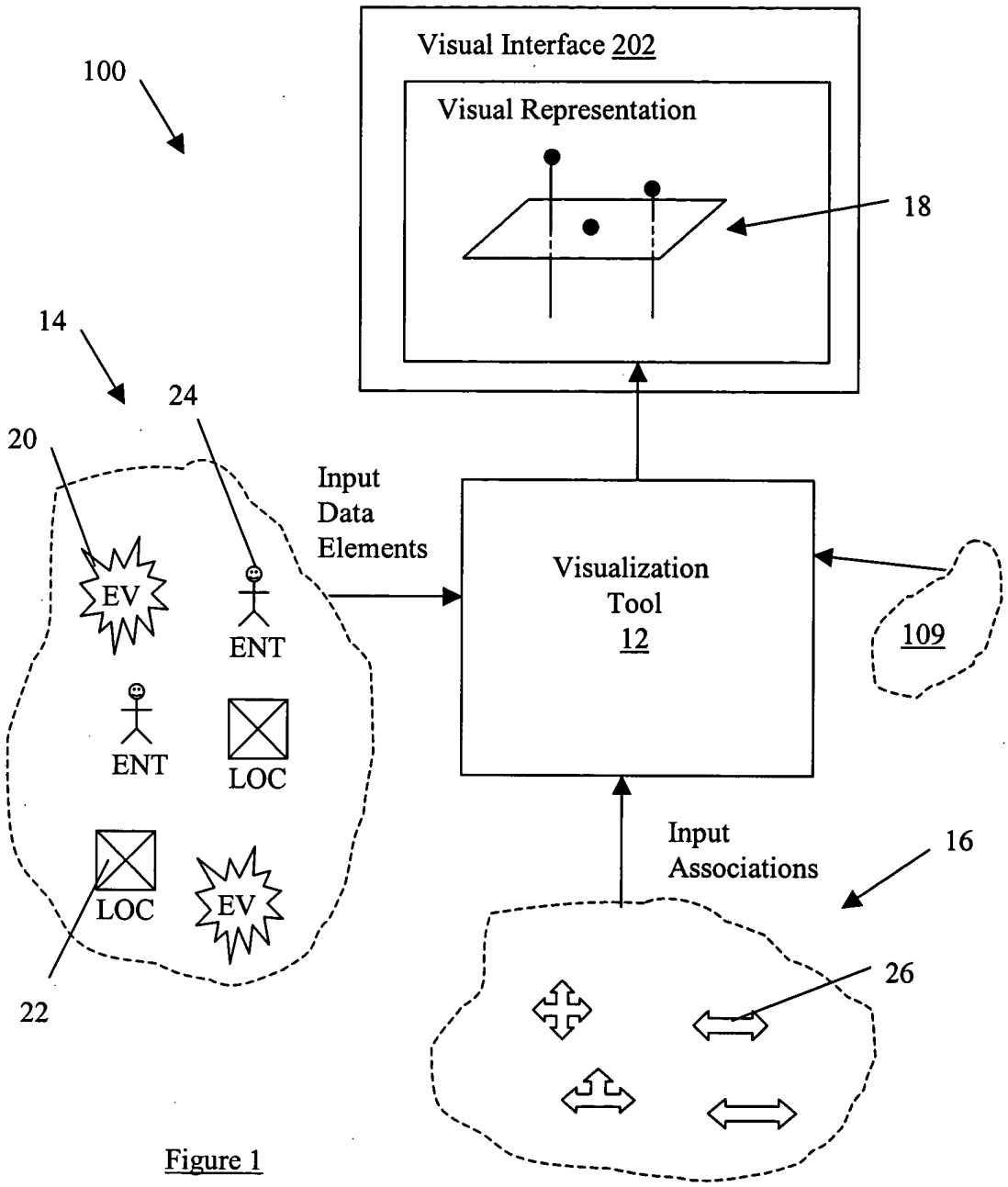

100
Visual Interface 202
Visual Representation
18
14
24
20
Input
Data
Elements
EV
ENT
ENT
LOC
LOC
EV
22
Visualization
Tool
12
109
Input
Associations
16
26

Figure 1

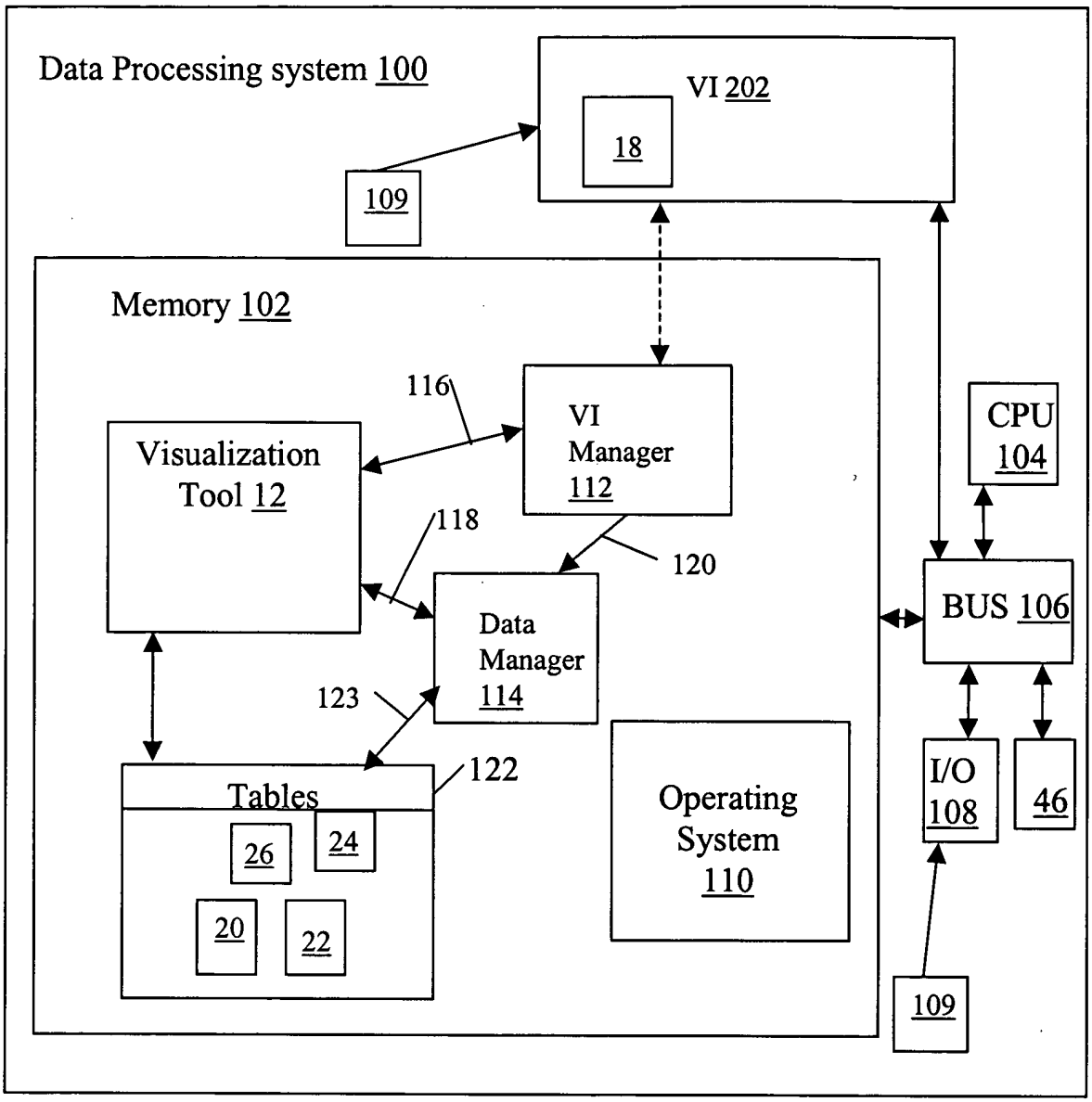

Data Processing system 100
VI 202
18
109
Memory 102
116
VI
Manager
112
Visualization
Tool 12
118
120
Data
Manager
114
123
122
Tables
26
24
20
22
Operating
System
110
CPU
104
BUS 106
I/O
108
46
109

Figure 2

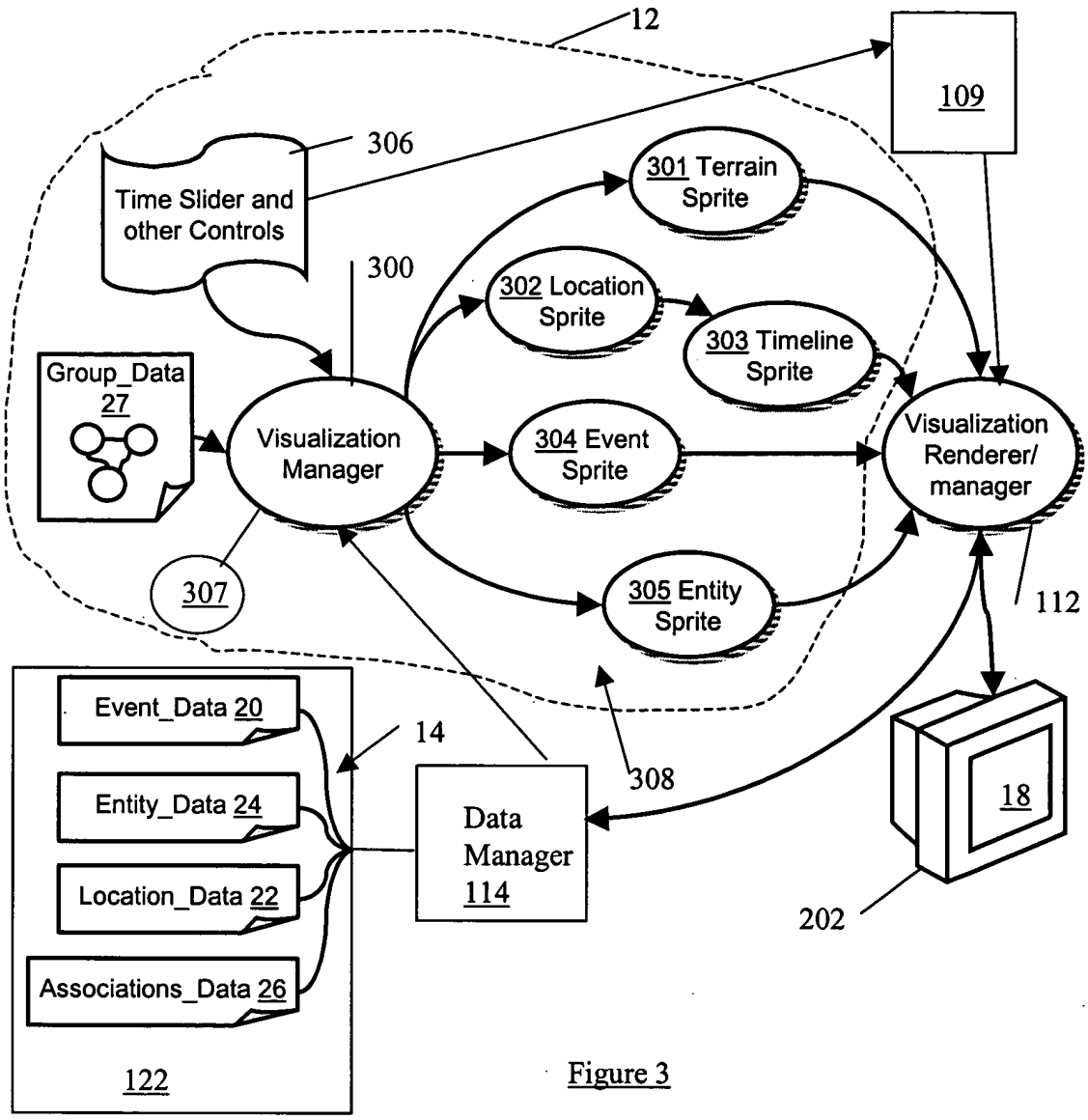

12
109
306
Time Slider and other Controls
300
301 Terrain Sprite
302 Location Sprite
303 Timeline Sprite
Group_Data 27
Visualization Manager
304 Event Sprite
Visualization Renderer/ manager
307
305 Entity Sprite
112
Event_Data 20
14
Entity_Data 24
Location_Data 22
Associations_Data 26
122
Data Manager 114
308
18
202

Figure 3

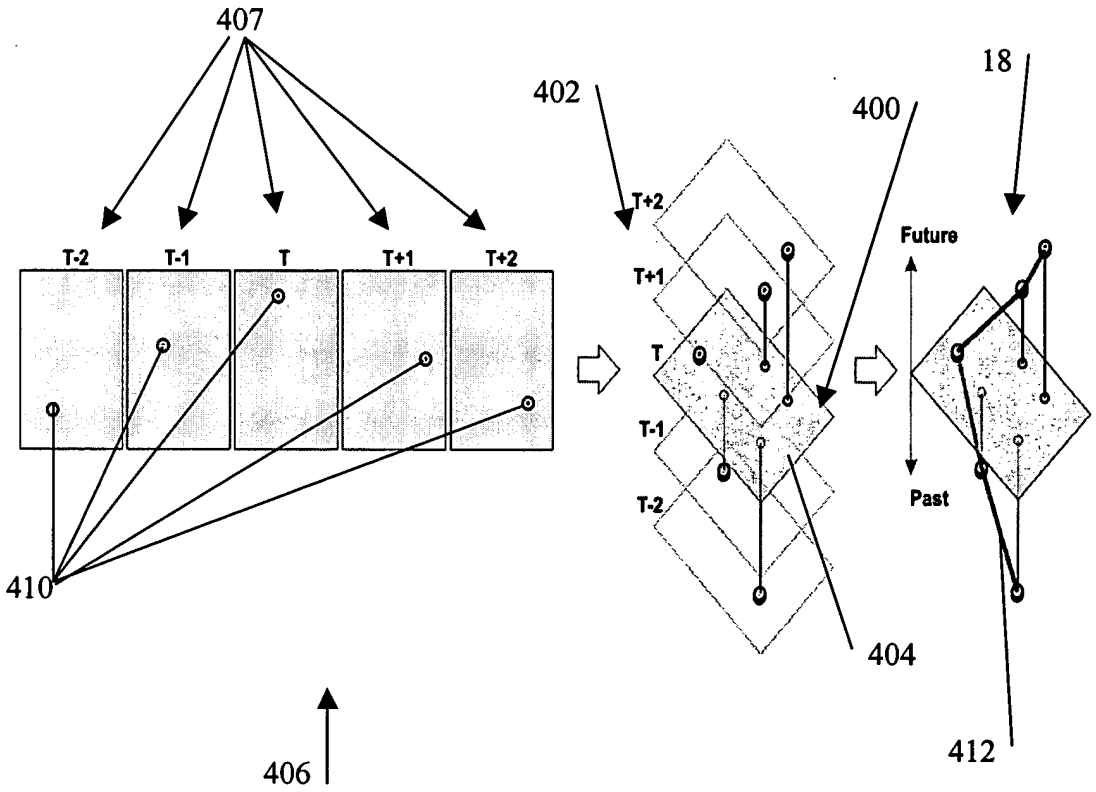

407
402
400
18
T-2
T-1
T
T+1
T+2
T+2
T+1
T
T-1
T-2
Future
Past
410
404
412
406

Figure 4

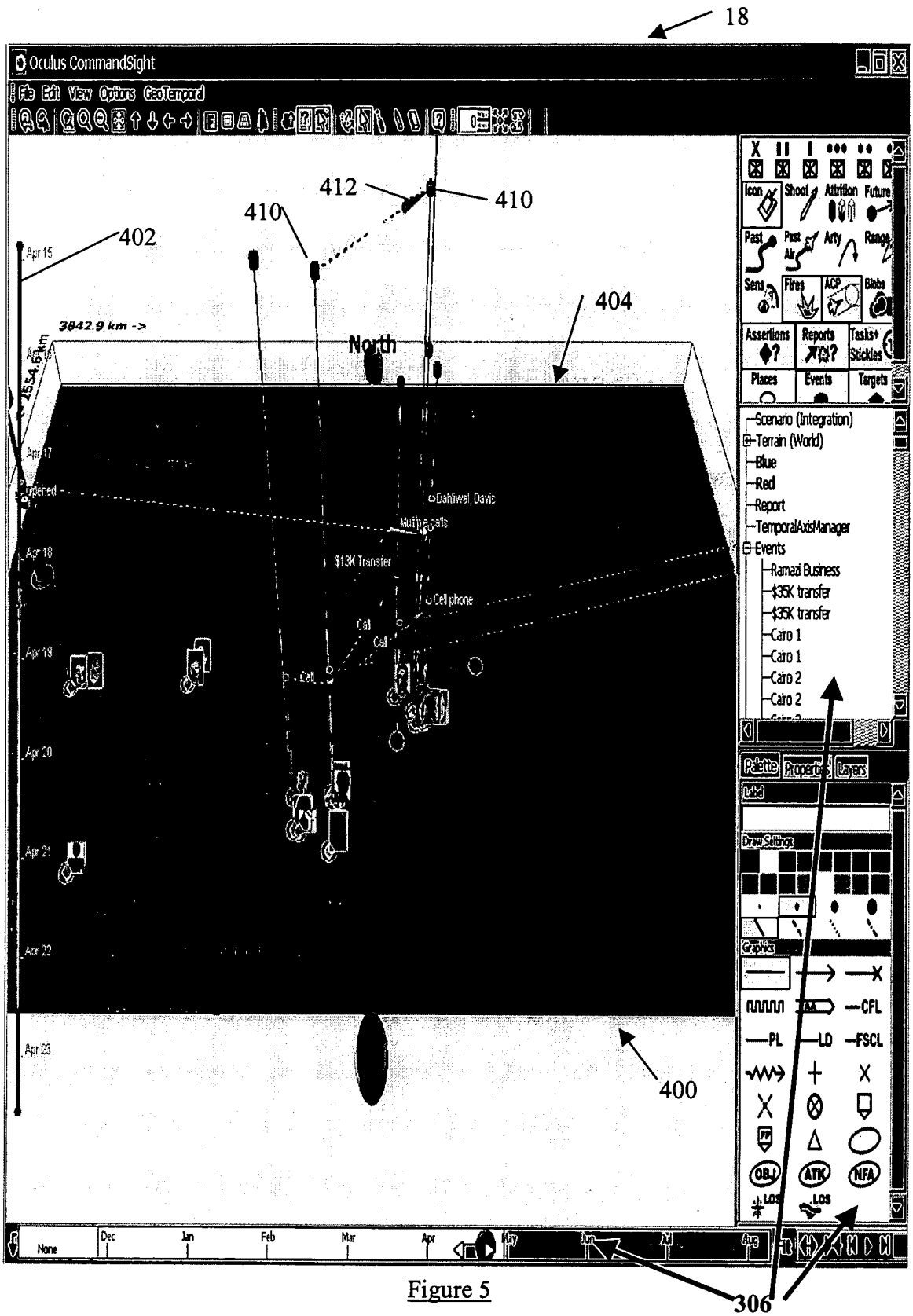
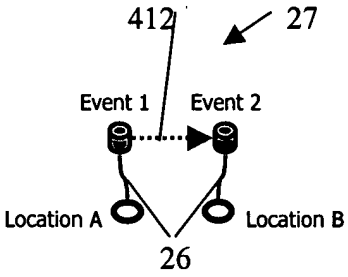
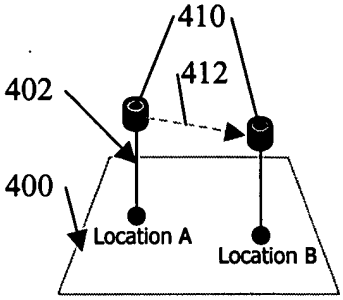
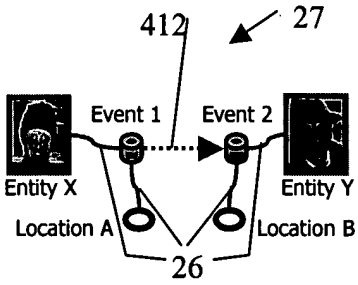

18
Oculus CommandSight
File Edit View Options GeoTemporal
412
410
410
402
404
North
3842.9 km ->
Apr 15
Apr 17
Apr 18
Apr 19
Apr 20
Apr 21
Apr 22
Apr 23
Dshilwal, Davic
Multiple calls
$13K Transfer
Cell phone
Call
Call
Call
Scenario (Integration)
Terrain (World)
Blue
Red
Report
TemporalAxisManager
Events
Ramazi Business
$35K transfer
$35K transfer
Cairo 1
Cairo 1
Cairo 2
Cairo 2
Palette
Properties
Layers
Draw Settings
Graphics
CFL
PL
LD
FSCL
OBJ
ATK
NFA
LOS
LOS
None
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
400
306

Figure 5

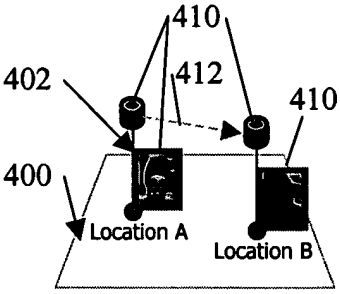


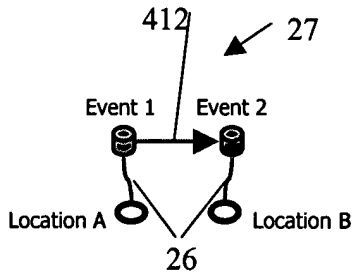
Soft Vector Group
(Phone Call, email, money transfer)
3 Associations:
•Event1 occurred at Location A
•Event 2 occurred at Location B
•Event 1 directed at Event 2



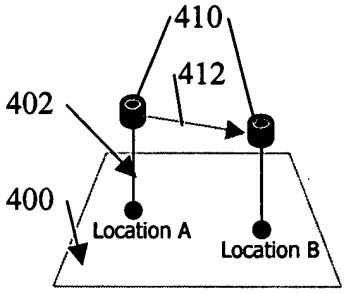


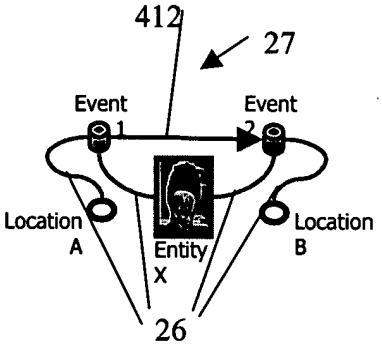
Soft Vector Group with Actors
(Phone Call, email, money transfer)
5 Associations: Same as above plus…
•Entity X present at Event 1
•Entity Y present at Event 2





Hard Vector Group
(Documented transport such as air or boat travel)
3 Associations:
•Event1 occurred at Location A
•Event 2 occurred at Location B
•Event 1 moves to Event 2





Hard Vector Group with Actors
(Transport of a person or thing)
5 Associations: Same as above plus…
•Entity X present at Event 1 (departure)
•Entity X present at Event 2 (arrival)

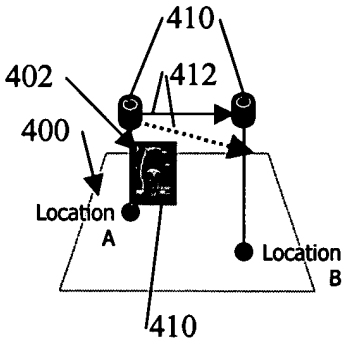
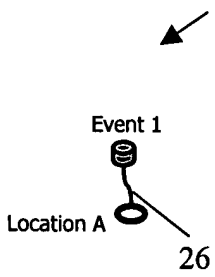
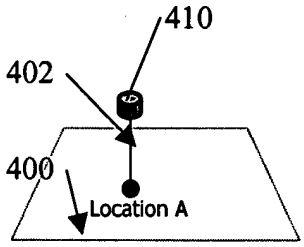
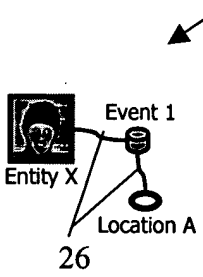


Figure 6

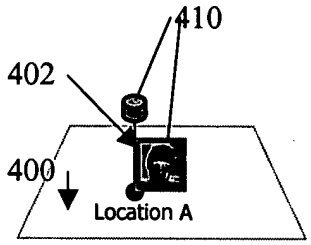


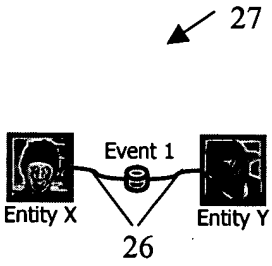
Observation Group
(An Incident, news item or observation)
1 Association
•Event 1 occurred at Location A



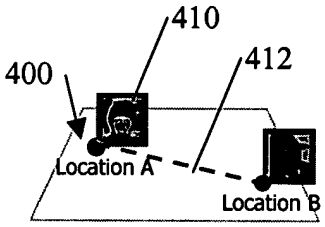


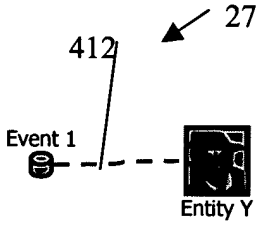
Observation with Actor
(Involvement in an incident, observer)
2 Associations:
•Event 1 occurred at Location A
•Entity X present at Event 1





Actor Relationship
(Familial or employer-employee relationships, organization membership)
2 Associations:
•Entity X member of Event 1
•Entity Y member of Event 1





Observation Relationship
(Indirect involvement)
1 Association:
•Entity X member of Event 1

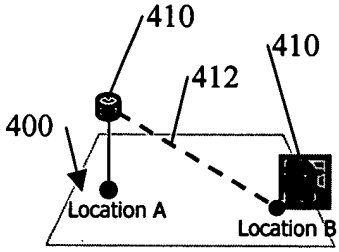


Figure 7

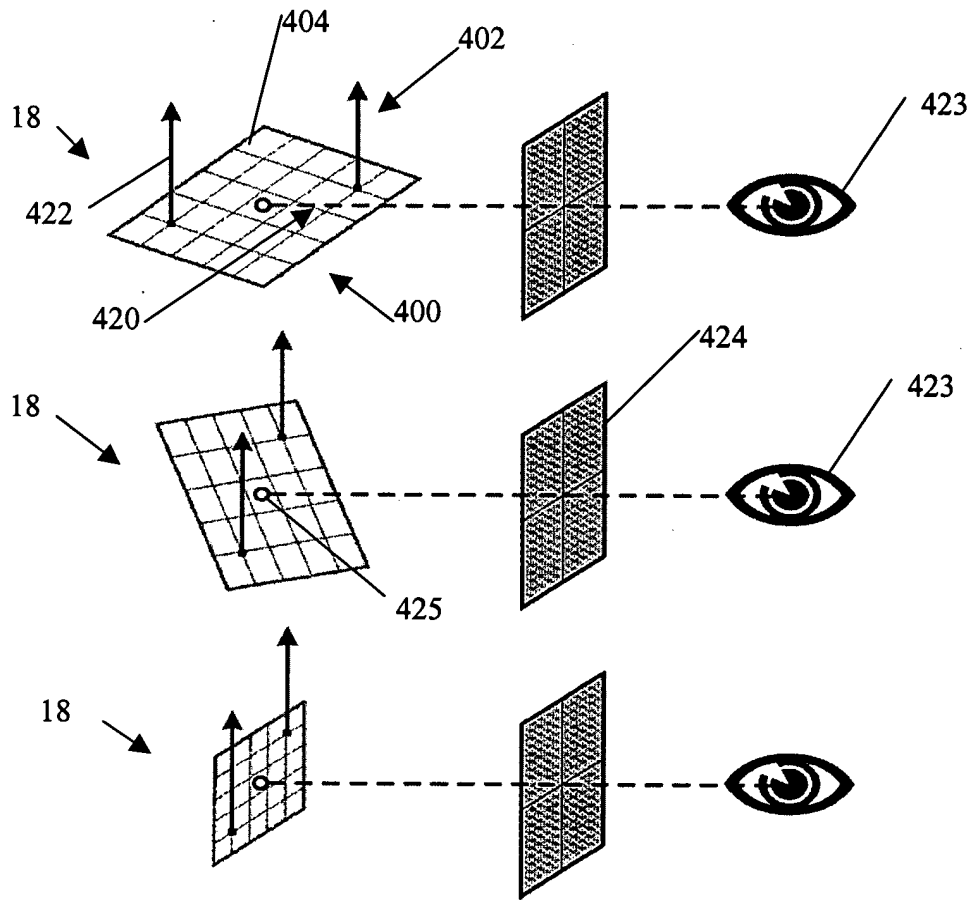


Figure 8

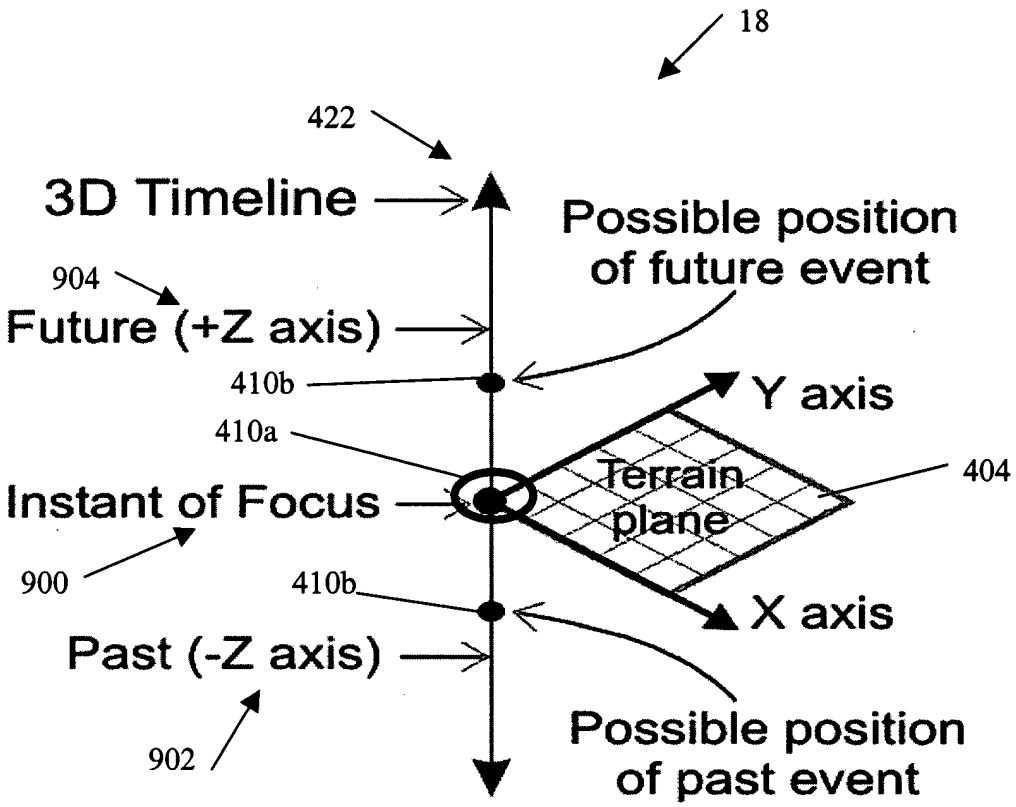

18
422
3D Timeline
Possible position of future event
904
Future (+Z axis)
410b
Y axis
410a
Terrain plane
404
Instant of Focus
900
410b
X axis
Past (-Z axis)
902
Possible position of past event

Figure 9

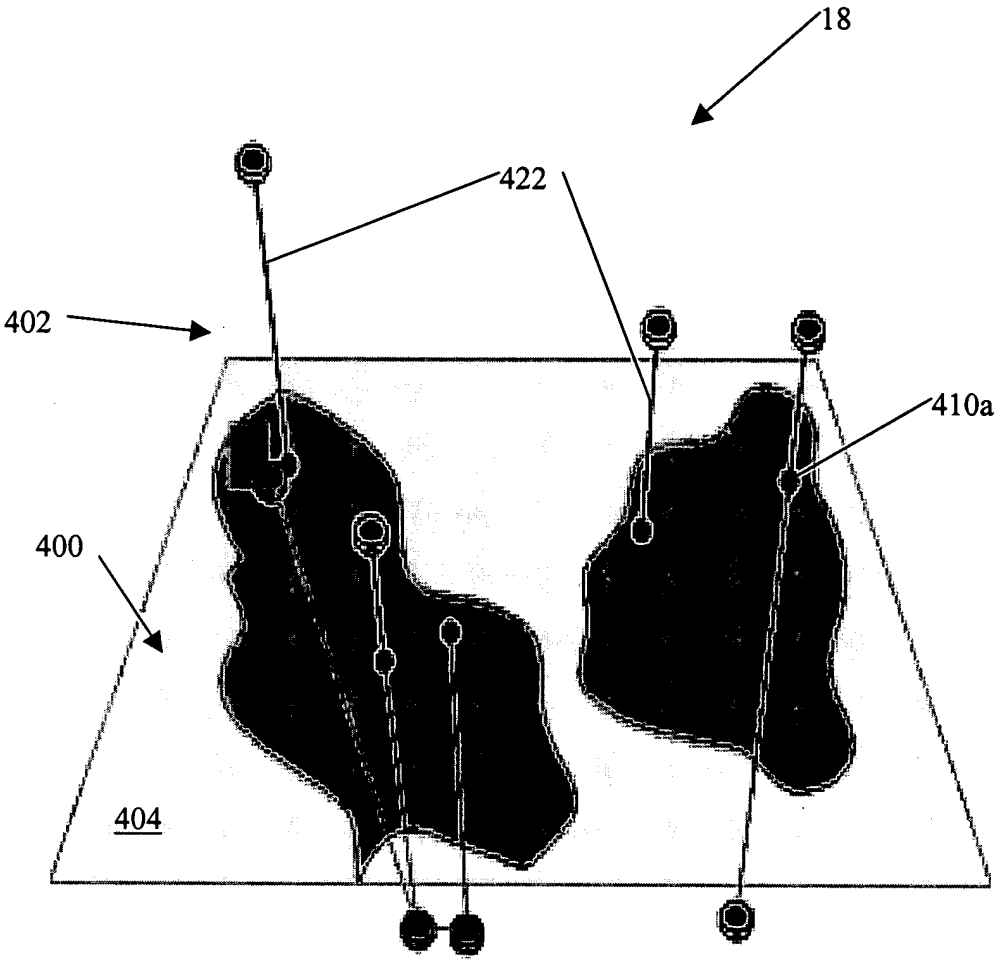


Figure 10

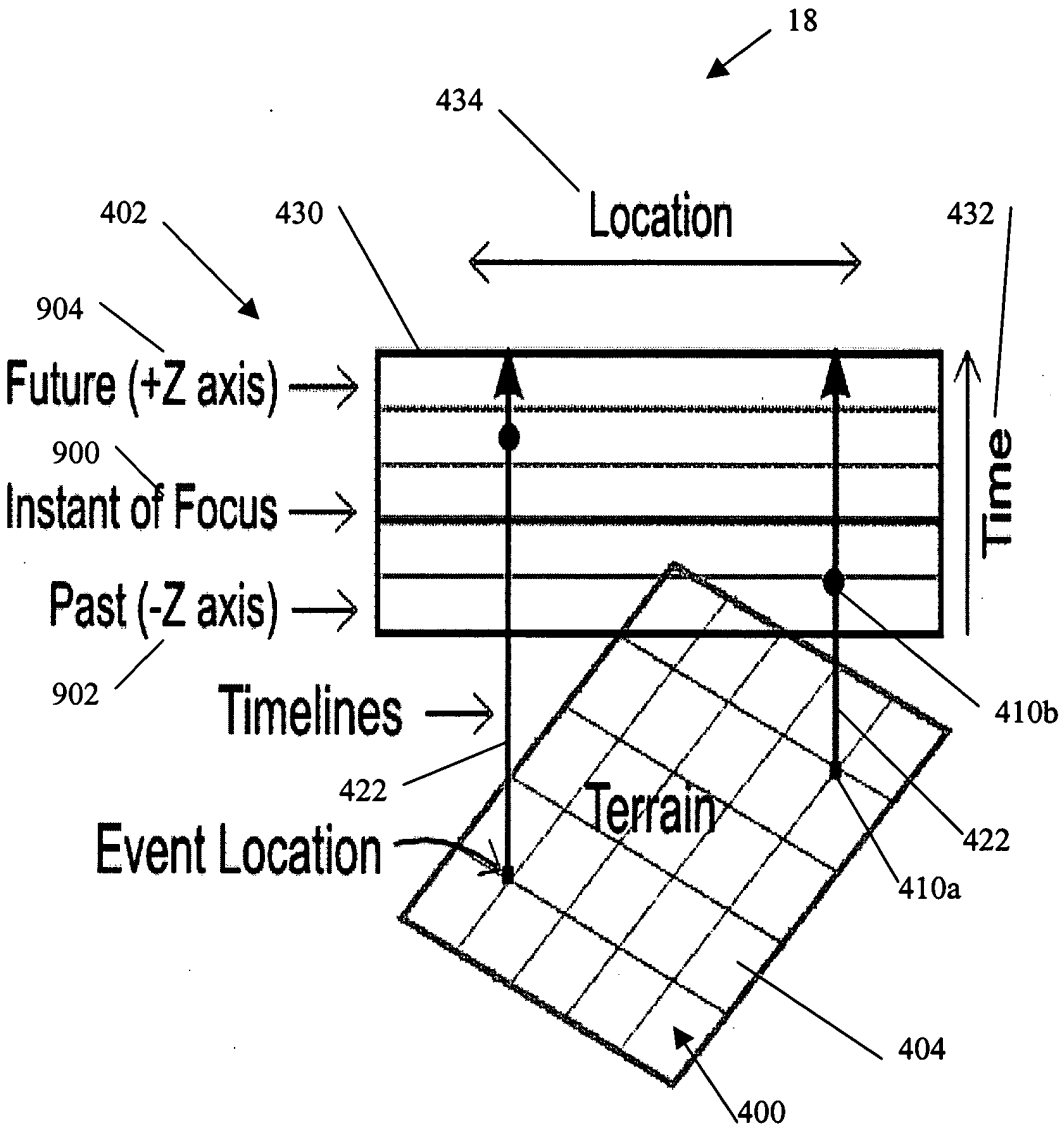

18
434
Location
402
430
432
904
Future (+Z axis)
900
Instant of Focus
Past (-Z axis)
902
Time
Timelines
410b
422
Terrain
422
Event Location
410a
404
400

Figure 11

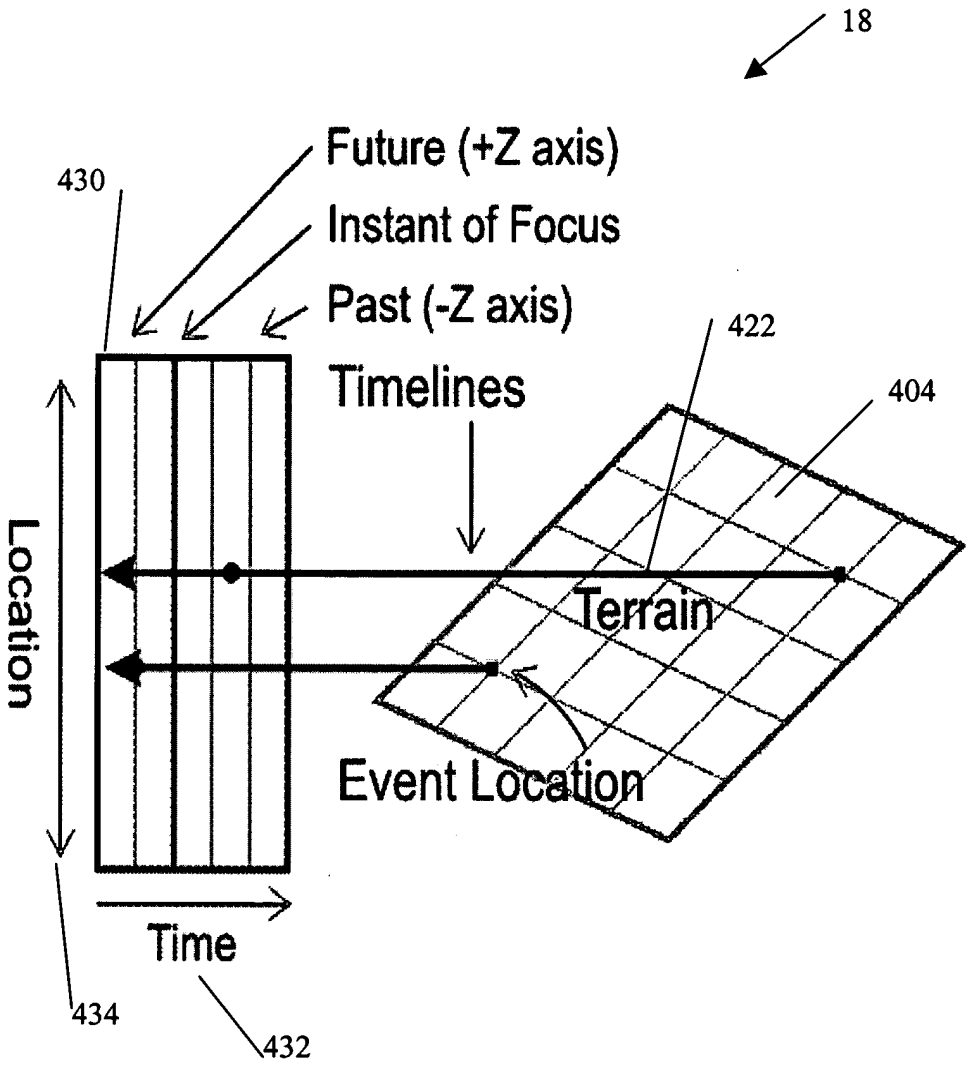

18
Future (+Z axis)
Instant of Focus
Past (-Z axis)
430
422
404
Timelines
Location
Terrain
Event Location
Time
434
432

Figure 12

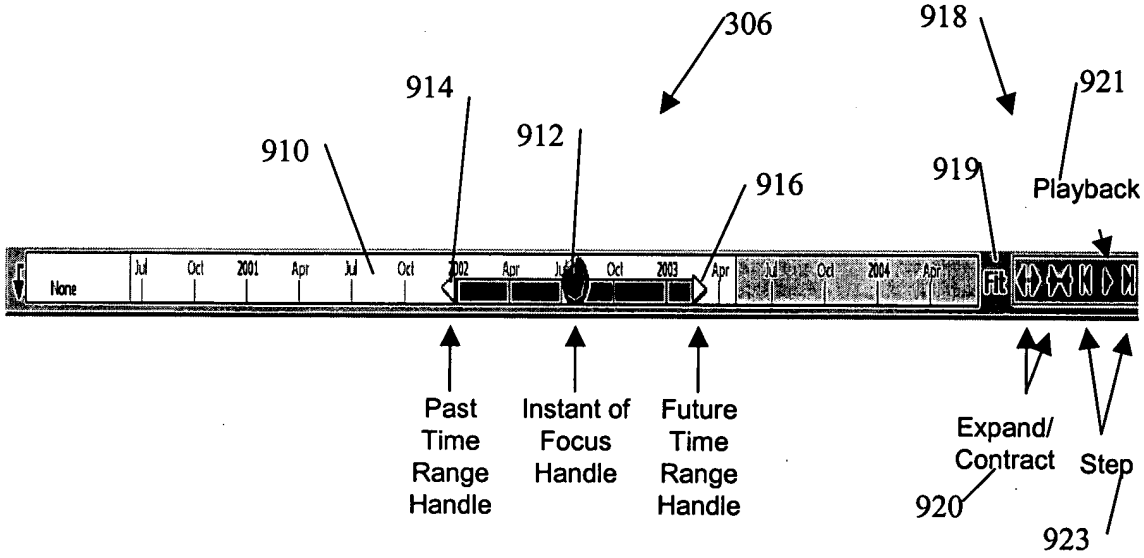

306
918
914
921
910
912
919
916
Playback
None
Jul
Oct
2001
Apr
Jul
Oct
2002
Apr
Jul
Oct
2003
Apr
Jul
Oct
2004
Apr
Fit
Past Time Range Handle
Instant of Focus Handle
Future Time Range Handle
Expand/ Contract
Step
920
923

Figure 13

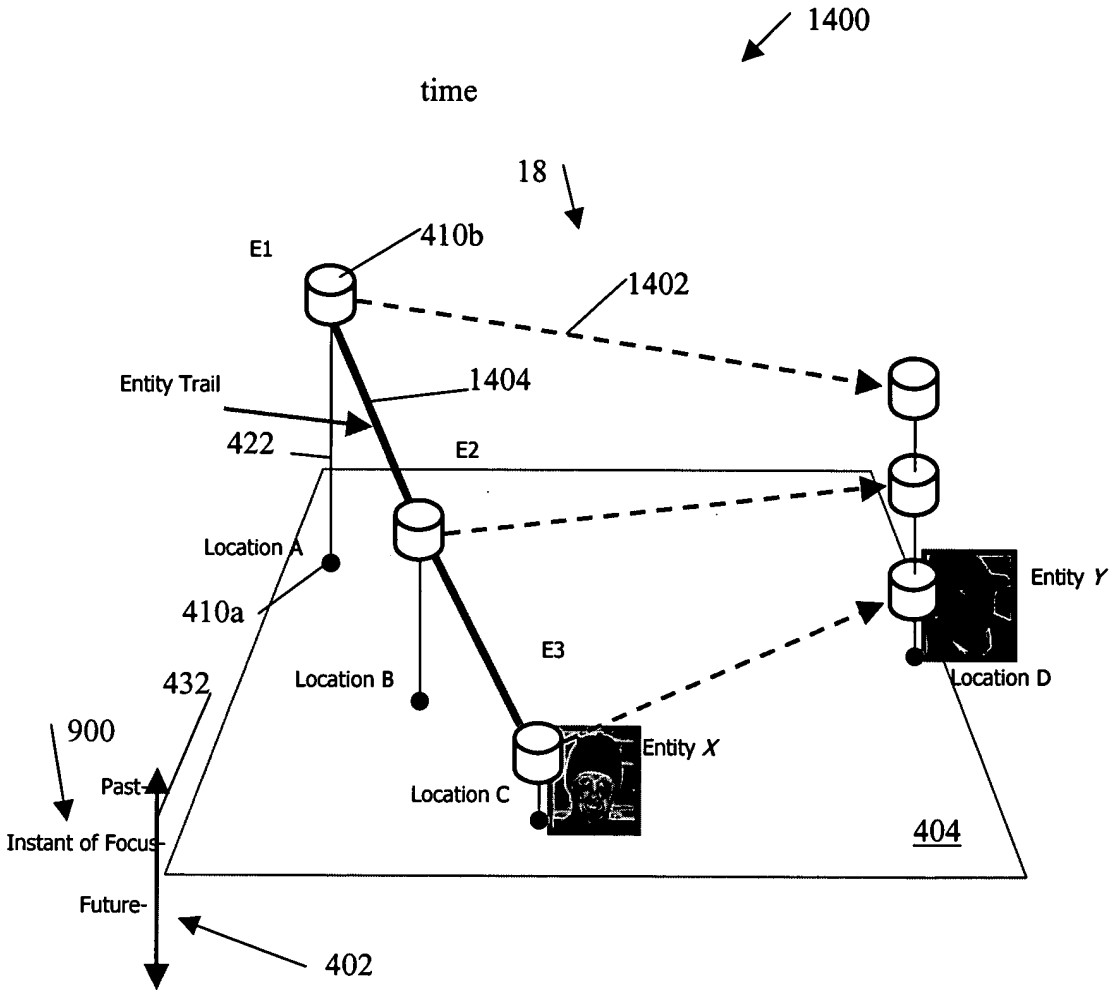

1400
time
18
E1
410b
1402
Entity Trail
1404
422
E2
Location A
410a
E3
Location B
432
900
Past
Instant of Focus
Future
402
Location C
Entity X
Entity Y
Location D
404

Figure 14

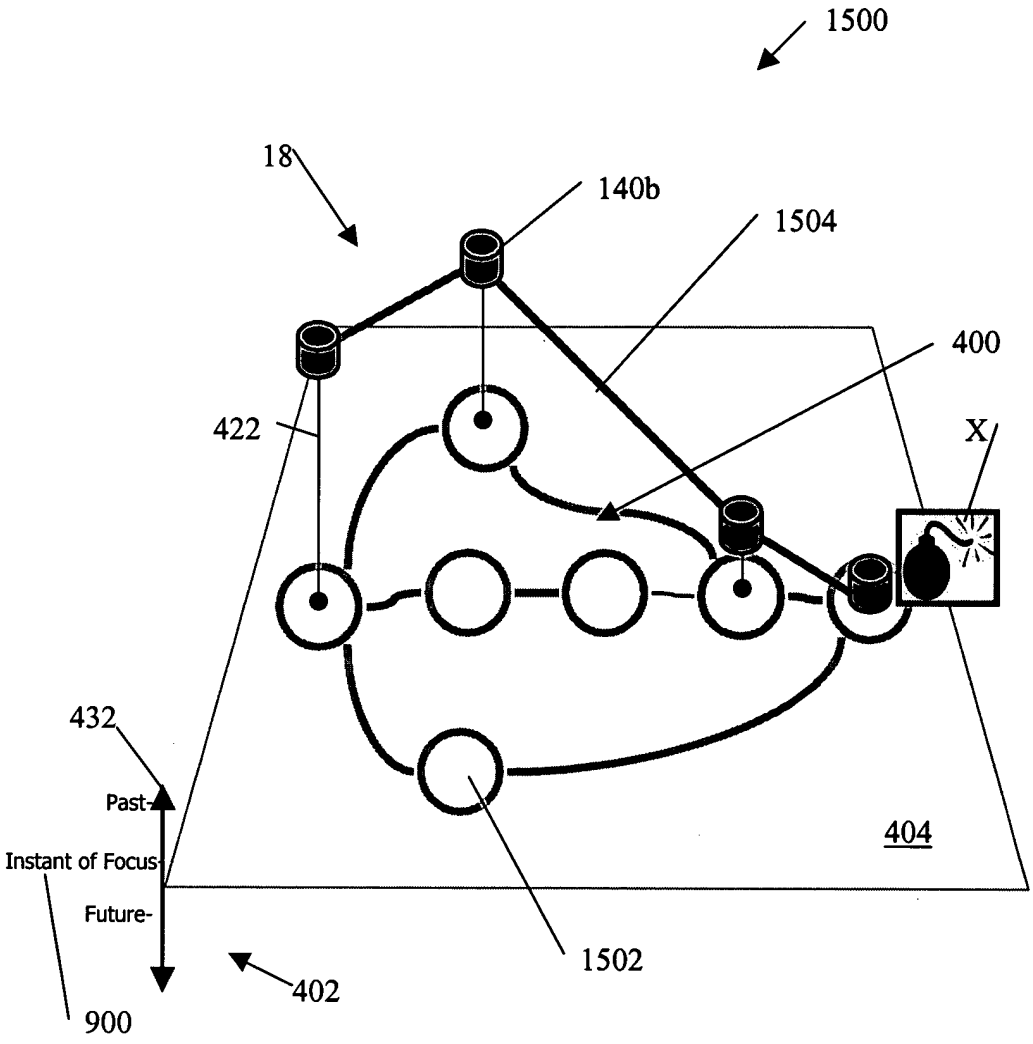

1500
18
140b
1504
400
422
X
432
Past-
Instant of Focus
Future-
404
1502
402
900

Figure 15

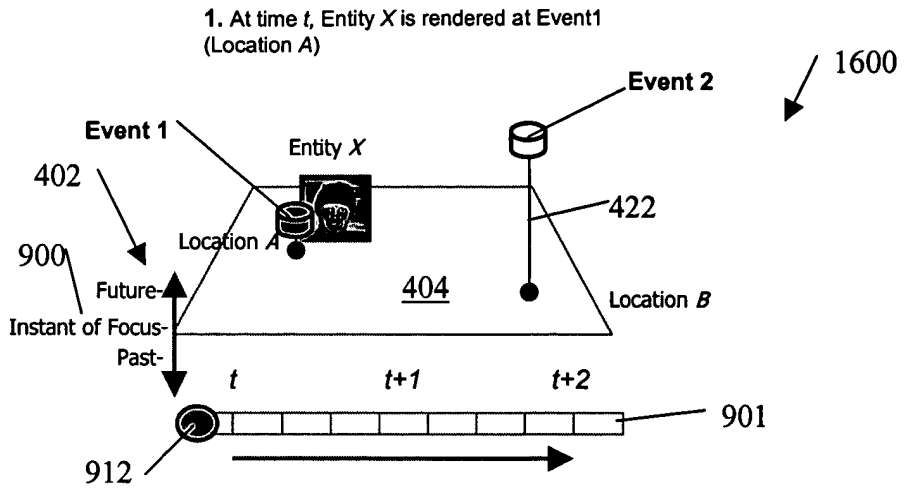
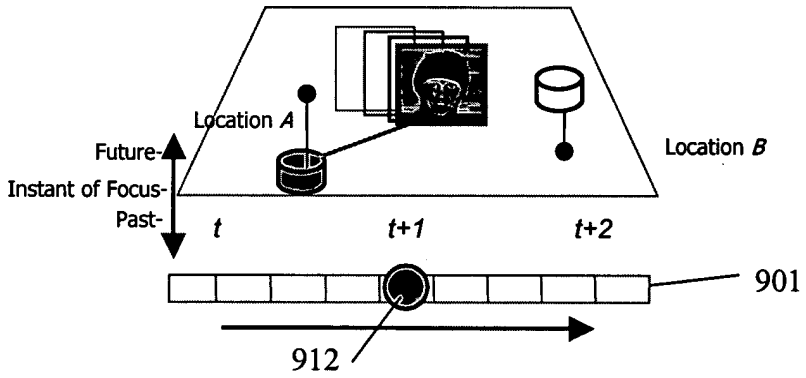
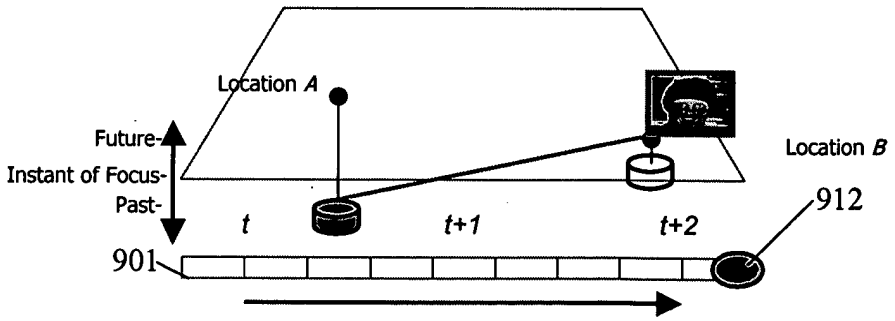

1. At time t, Entity X is rendered at Event1 (Location A)
1600
Event 2
Event 1
Entity X
402
422
900
Location A
404
Location B
Future-
Instant of Focus-
Past-
t
t+1
t+2
901
912

Figure 16


2. At time t+1, Entity X is shown moving between known locations (Event1 and Event2)
Location A
Location B
Future-
Instant of Focus-
Past-
t
t+1
t+2
901
912


3. At time t+2, Entity X is rendered at Event2 (Location B)
Location A
Location B
Future-
Instant of Focus-
Past-
t
t+1
t+2
912
901

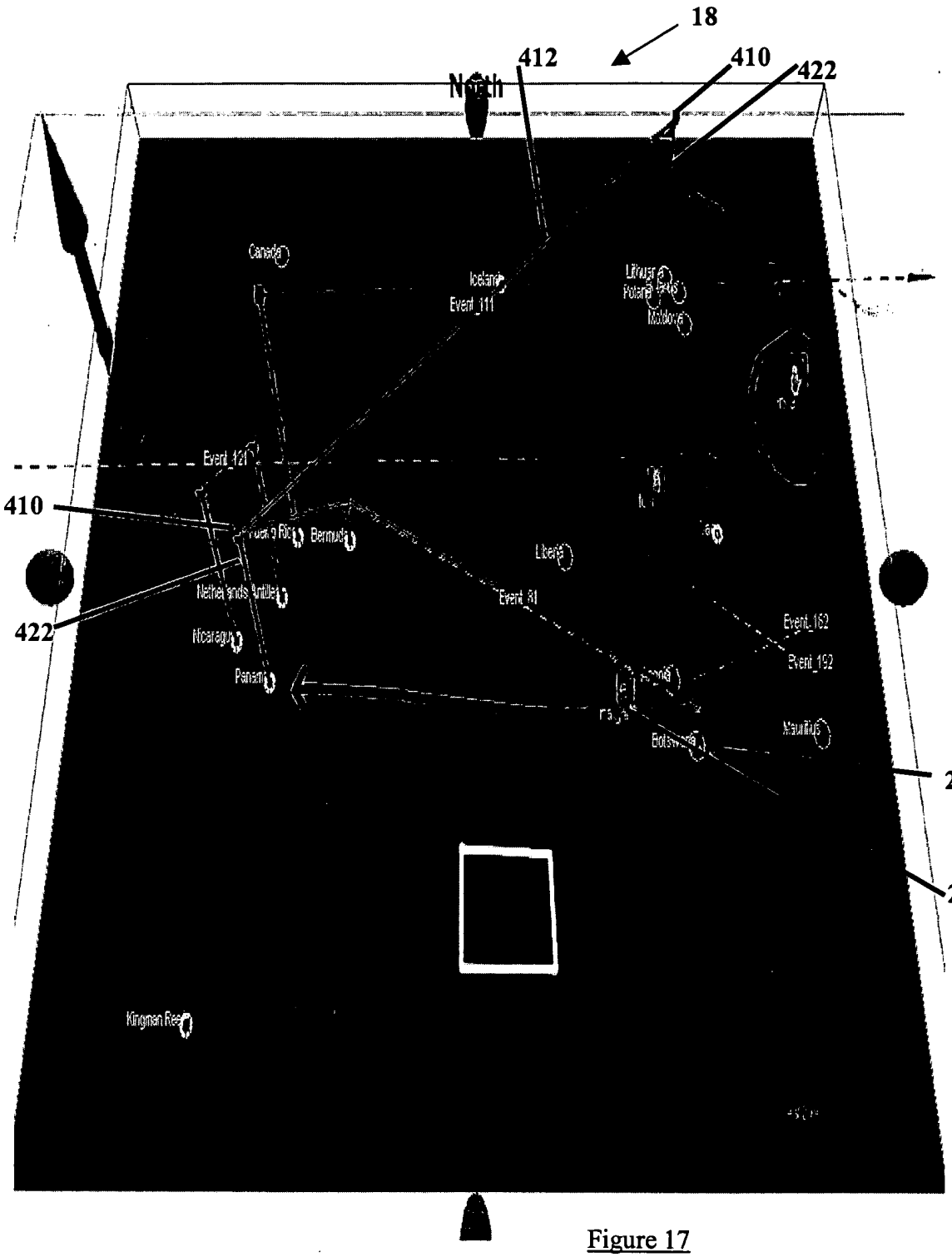


Figure 17

BEST AVAILABLE COPY

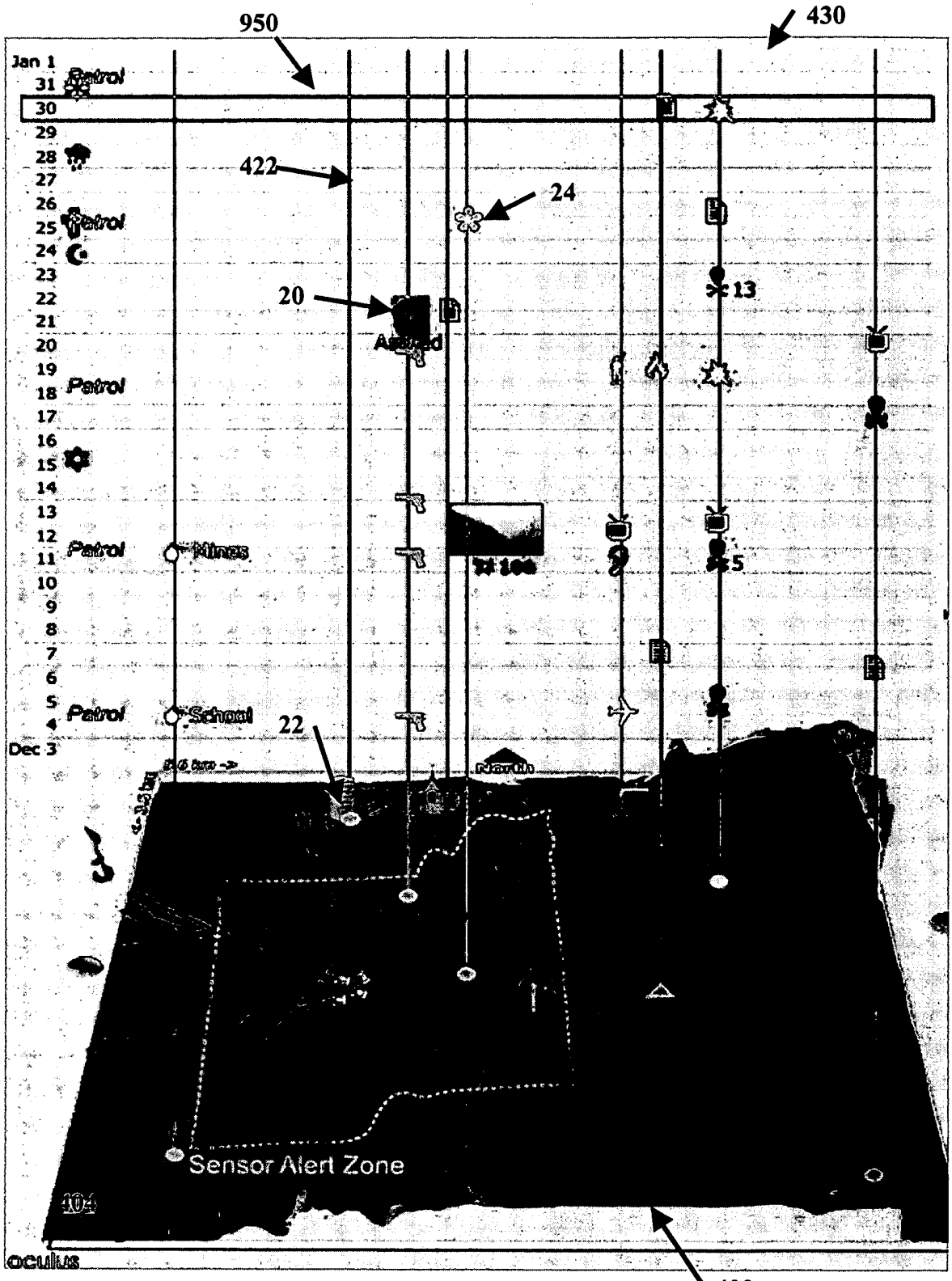


Figure 18

BEST AVAILABLE COPY

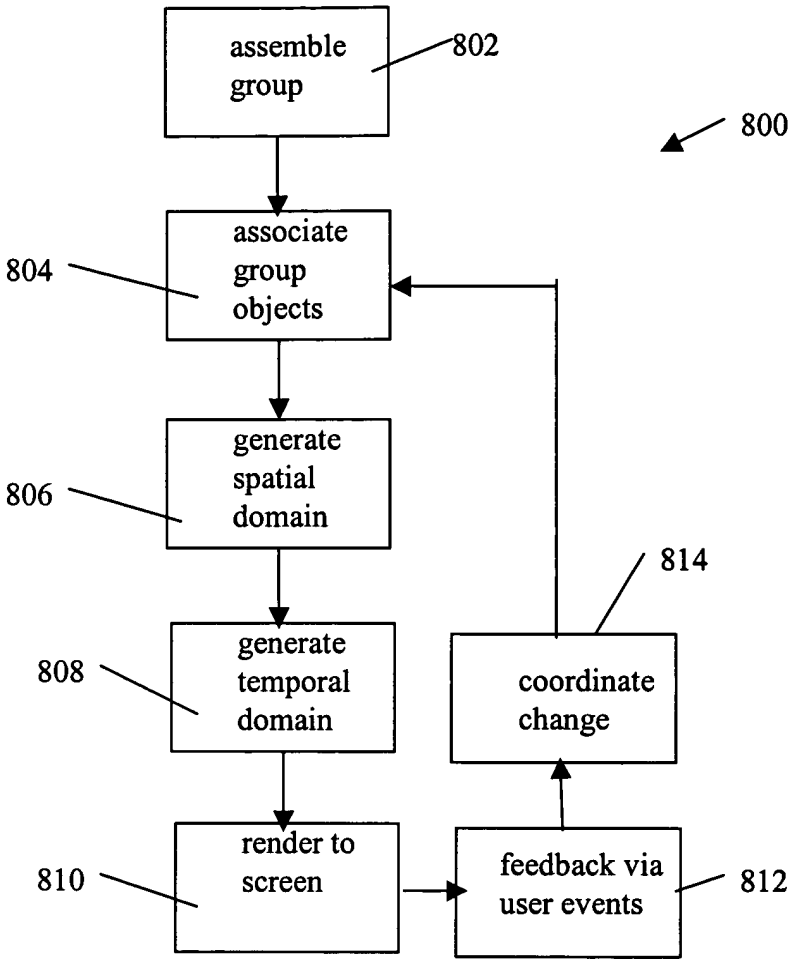


Figure 19

BEST AVAILABLE COPY